What is claimed is:

1. A tester for screening of individual chips of an electro-optical array, the tester comprising:

a holder for securing the electro-optical array in a fixed position referenced from a fixed reference for measurement purposes; and

a far-field measurement system for polarization-resolving an optical measurement of the individual chips as a function of the fixed reference.

2. The tester of claim 1 wherein the far-field measurement system comprises:

a movable measurement system for moving at least one optical characterizer with respect to the fixed reference, in at least one relative direction, with respect to the fixed position of the electro-optical array, the movable measurement system having

a prober for selectively probing a selected chip of the electro-optical array in the fixed position,

the at least one optical characterizer having at least one member selected from a group comprising a narrowband wavelength-selective filter and a polarization-selective filter for spatially moving about the selected chip for collecting an emission; and

a controller for compiling the optical measurement by resolving the emission as a function of the angular position of the at least one optical characterizer to the selected chip.

3. The tester of claim 2 wherein the at least one optical characterizer comprises at least one photodetector.

4. The tester of claim 2 wherein the at least one optical characterizer comprises an integrating sphere when the chip emits in a small diverging angle.

5. The tester of claim 4, wherein the chip comprises a semiconductor optical amplifier (SOA), wherien the integrating sphere laterally moves towards the selected SOA for collecting an amplified spontaneous emission (ASE).

6. The tester of claim 3 wherein the at least one photodetector comprises:

at least a first pair of TM photodetectors for collecting a far-field TM emission pattern of the selected chip, wherein one of the pair of TM photodetectors will collect in a far-field horizontal arc path and the one of the pair of TM photodetectors will collect in a far-field vertical arc path;

at least a second pair of TE photodetectors for collecting a far-field TE emission pattern of the selected chip, wherein one of the pair of TE photodetectors will collect in a far-field horizontal arc path and the one of the pair of TE photodetectors will collect in a far-field vertical arc path;

a first motor-driven arm for mounting and moving a first one of the TM and TE photodetectors in the far-field horizontal arc path relative to the selected chip to sample the horizontal far-field;

a second motor-driven arm for mounting and moving a second one of the TM and TE detectors in the far-field vertical arc path relative to the selected chip to sample the vertical far-field; and

a motion controller for controlling the movement of the at least one of the first and second motor-driven arms to move at least one of the TM and TE pair of photodetectors in the arc path relative to the fixed reference.

7. The tester of claim 6 wherein the chip comprises a semiconductor optical amplifier (SOA) having an amplified spontaneous emission (ASE) wherein the at least first and second pairs of TM and TE photodetectors collect a far-field ASE pattern of the selected SOA.

8. The tester of claim 6 wherein the chip comprises a laser wherein the at least first and second pairs of TM and TE photodetectors collect a far-field power measurement of the selected laser.

9. The tester of claim 6 wherein the polarization-selective filter comprises a TM polarizing filter for selecting the TM polarization vectors to be received by the photodetector.

10. The tester of claim 7 wherein the polarization-selective filter comprises a TE polarizing filter, for selecting the TE polarization vectors to received by the photodetector.

11. The tester of claim 6 wherein the narrowband wavelength-selective filter comprises a narrow bandpass filter for transmitting wavelengths about a selected wavelength λ in a narrow bandwidth approximately between $\lambda - \Delta\lambda/2$ to $\lambda + \Delta\lambda/2$.

12. The tester of claim 11 wherein the narrowband wavelength-selective filter comprises a second narrow bandpass filter for transmitting wavelengths in a second bandwidth approximately between $\lambda_2 - \Delta\lambda_2/2$ to $\lambda_2 + \Delta\lambda_2/2$ such that the optical output at different wavelengths can be optically characterized.

13. The tester of claim 6 wherein the movable measurement system comprises a plurality of lock-in amplifiers for synchronizing a corresponding photodetector with the current modulation applied by the controller to a current amplifier for current injection of the selected chip for improving accuracy of the movable measurement system.

14. The tester of claim 7 wherein the controller determines an integrated total ASE power from the far-field ASE pattern of the selected SOA.

15. The tester of claim 14 wherein the controller determines gain of the SOA from the integrated total ASE power of the selected SOA for both TE and TM polarizations.

16. The tester of claim 13 wherein the controller determines gain of the SOA from the integrated total ASE power of the selected SOA as the injection current level to the selected SOA is varied by the controller to determine gain as a function of current.

17. A method for screening individual ones of a semiconductor device of an electro-optical array, the method comprising the steps of:

providing a fixed reference for measurement purposes;

securing the electro-optical array in a fixed position referenced from the fixed reference, wherein the securing step comprises the steps of:

stepping a probe towards the electro-optical array in a first step size;

checking to determine if an electrical loop is closed on the electro-optical array;

continuing to step the probe continuously in a second step size that is continuously smaller than the previous step size, as expected contact is approximated, toward the laser array until the electrical loop is closed; and

contacting the electro-optical array in the fixed position with the probe and securing the probe in a contact position for closing the electrical loop, wherein the contact position is not moved from the fixed reference and contact is maintained as the fixed reference and as the fixed position for all subsequent polarization-resolving of optical measurements of the same individual one of the semiconductor devices of the electro-optical array; and

moving at least one detector to a selected position referenced from the fixed reference, wherein the selected position of the at least one detector is also changed from the fixed position of the laser array.

18. The method of claim 17 wherein the moving step comprises the steps of:

vertically moving a prober for selectively probing a selected semiconductor device of the electro-optical array in the fixed position;

moving a first pair of TM and TE detectors in a horizontal arc path relative to the selected semiconductor device to sample a horizontal far-field in a selected narrow wavelength passband; and

moving a second pair of TM and TE detectors in a vertical arc path relative to the selected semiconductor device to sample a vertical far-field in the selected narrow wavelength passband.

19. The tester of claim 15, wherein the controller determines a polarization dependent gain (PDG) as the difference in TE gain and TM gain.

20. A tester for screening individual ones of a semiconductor device of an electro-optical array, the tester comprising:

a vacuum suction for securing the array while the array is moved horizontally to a preselected indexed position referenced from a fixed reference;

a vacuum held and temperature controlled semiconductor electro-optical device array array assembly for receiving the vacuum suction and holding the array in the fixed position once the selected semiconductor device has been moved horizontally to the preselected indexed position referenced from the fixed reference;

a vertically movable prober for contacting the selected semiconductor device at the preselected indexed position at a contact position, wherein the contact position is not moved from the fixed reference and contact is maintained as the fixed reference and as the fixed position for all subsequent optical measurements of the same individual one of the semiconductor device of the electro-optical array; wherein the vertically movable prober comprises:

a fixture controllable for providing a vertical movement;

a first probe mounted on the fixture for contacting the selected semiconductor device at the preselected indexed position;

a second probe mounted on the fixture for contacting the vacuum held and temperature controlled laser array assembly for minimizing microwave reflections; and

at least one movable detector movable from the fixed reference for polarization resolving an optical measurement of the selected semiconductor device as a function of the distance moved by the at least one detector with reference to the preselected indexed position of the selected semiconductor device, wherein the change in angular displacement of the at least one detector from the preselected indexed position of the selected semiconductor device is the same change in distance of the at least one detector from the fixed reference.